

REMARKS

In view of the above amendments and following remarks, reconsideration and further examination are requested.

In the Office Action mailed January 29, 2004, claims 27 and 29-40 were rejected under 35 U.S.C. § 112, first paragraph, for containing new matter. Specifically, this rejection stated that the specification fails to disclose that the leading ends of the pillared electrodes extend to a uniform height relative to one another.

Also in the January 29, 2004 Office Action: claims 27-31, 33-35, 38, 40 and 56 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al. in view of Hikita et al. and Juskey et al; claim 32 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al., Juskey et al. and Hikita et al., and further in view of Sakai et al; claims 36 and 37 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al., Hikita et al. and Juskey et al., and further in view of Kondoh et al; claim 39 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al., Hikita et al. and Juskey et al., and further in view of Urushima; and claims 57-60 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Takahashi et al. in view of Hikita et al., Juskey et al. and Kondoh et al.

In light of the above rejections, a personal interview was conducted with Examiner Rose on July 13, 2004. The courtesies extended by Examiner Rose during this personal interview are greatly appreciated. Initially during the interview, the 35 U.S.C. § 112, first paragraph, rejection was discussed. Specifically, Applicants' undersigned representative pointed out where in the original specification support can be found for the leading ends of the pillared electrodes extending to a uniform height relative to one another. Namely, such support can be found at least on page 7, lines 8-12, page 12, lines 8-15, page 30, line 21 through page 31, line 12, page 32, lines 4-13, page 47, line 23 through page 48, line 9, and original claims 8 and 21. Examiner Rose indicated that the 35 U.S.C. § 112, first paragraph, rejection would not be maintained.

Next during the interview were discussed the prior art rejections. Specifically, with regard to the pillared electrodes 11 extending to a uniform height, Applicants' undersigned representative explained benefits realized by having these electrodes extend to the same height. Namely, by having the pillared electrodes extend to a uniform height, when a semiconductor package including these

electrodes is to be connected to a circuit board, a better and more reliable connection can be made between the electrodes and the circuit board. Also, because the leading ends of the electrodes extend to the same height, a higher radiation efficiency can be realized relative to a semiconductor package having electrodes that do not extend to the same height.

Applicants' undersigned representative then explained why a combination of Takahashi et al. and Hikita et al. would not result in a semiconductor package having pillared electrodes extending to a uniform height. Specifically, even though Takahashi et al. discloses pin-like electrode terminals 29 in Figure 2C that appear to extend to a uniform height, nowhere in Takahashi et al. is it expressly stated that these electrodes do indeed extend to the same height, nor does it necessarily flow from the teachings of Takahashi et al. that these pin-like electrodes must extend to the same height. Rather, without some positive affirmation in Takahashi et al. that the pin-like electrodes 29 extend to the same height, and due to a manner by which electrodes are conventionally attached a circuit pattern, it is reasonable to believe that there is some variation with regard to the height that these electrodes extend relative to one another.

To the contrary, the instant invention eliminates possible variations in height to which the pillared electrodes extend by either performing the cutting operation as depicted in Figure 7B or the pressing operation as depicted in Figure 8A. This cutting or pressing operation ensures that the pillared electrodes will extend to the same height. Please see page 28, line 14 through page 32, line 13 of the original specification.

Not only does Takahashi et al. fail to teach or suggest electrodes that extend to a uniform height, but in order to reject independent claim 27 the Examiner relied upon a combination of Takahashi et al. and Hikita et al. for concluding that it would have been obvious to provide electrodes on semiconductor elements 12 of Takahashi et al. that extend to the same height as do electrodes 29. However, because the electrodes of Hikita et al. relied upon by the Examiner are merely bump electrodes, which are much different than the pin-like electrodes 29 of Takahashi et al. and which are more susceptible to height variations relative to one another, there is no reason to believe that these bump electrodes would extend to the same height relative to one another let alone to the same height as any of electrodes 29.

Examiner Rose indicated that she would further consider the rejection of claim 27 in view of the above; however, she also indicated that claims 57 and 59 would not be allowed even if claim 27 is found to be allowable, because claims 57 and 59 do not require that the pillared electrodes extend to a uniform height. Accordingly, claims 57 and 59 have been amended to make it clear that the pillared electrodes do extend to a uniform height. In this regard, the term “substantially” before the phrase --equally spaced-- has been deleted from each of claims 57 and 59.

Also during the interview, Examiner Rose indicated that the next to last “wherein” clause in each of claims 57 and 59 is somewhat confusingly worded in that the phrase “equally spaced” can possibly be interpreted to mean that the pillared electrodes are equally spaced laterally relative to one another. Accordingly, in order to avoid any possible confusion with regard to what is intended by these claims, claims 57 and 59 have been further amended to make it clear that the leading ends of the pillared electrodes are equally spaced from the surface of the heat radiating plate. In other words, claims 57 and 59 require the leading ends of the pillared electrodes to extend to a uniform height.

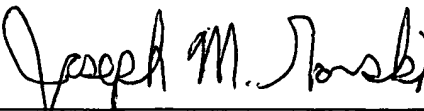
None of the other references relied upon by the Examiner resolve the aforementioned deficiencies of Takahashi et al. or Hikita et al., and accordingly, any possible combination of references would not result in a semiconductor package including pillared electrodes that extend to the same height, as required by each of independent claims 27, 57 and 59. Thus, claims 27, 57 and 59 are not obvious over any possible combination of the references, whereby these claims and their dependent claims are allowable.

In view of the above, it is respectfully submitted that the present application is now in condition for allowance, with the allowed claims being 27, 29-40 and 56-60, and an early Notice of Allowance is earnestly solicited.

If after reviewing this Amendment, the Examiner believes that any issues remain which must be resolved before the application can be passed to issue, the Examiner is invited to contact the Applicants' undersigned representative by telephone to resolve such issues.

Respectfully submitted,

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July 28, 2004